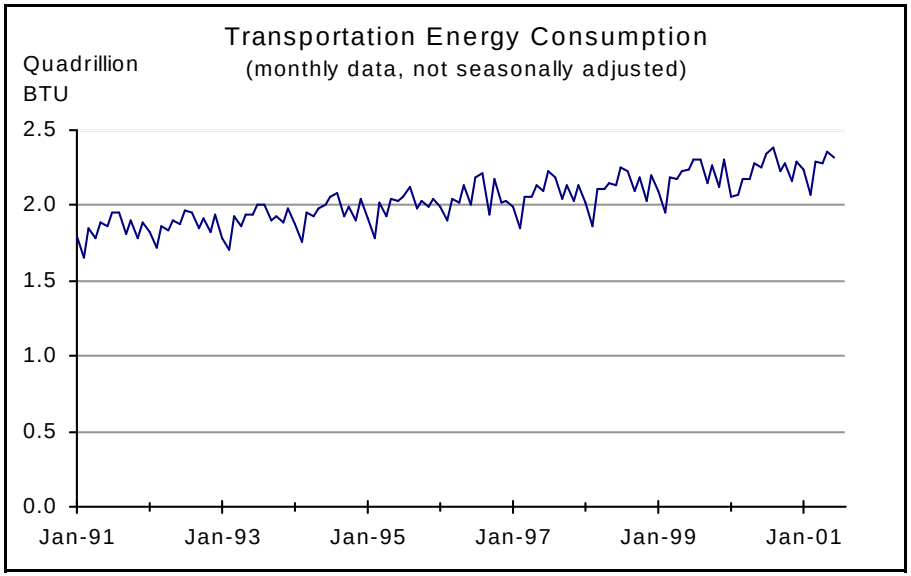
# Human and Natural Environment

# TRANSPORTATION ENERGY USE



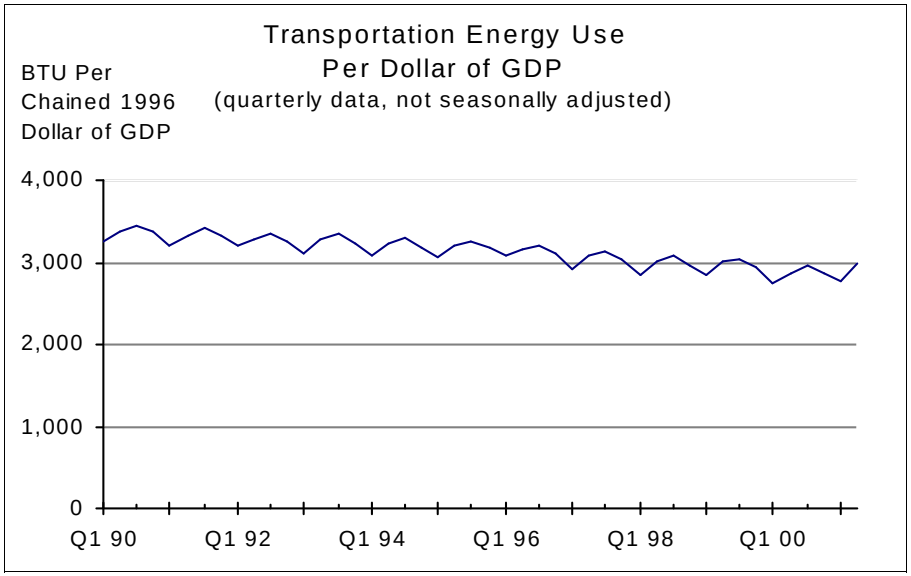

Transportation accounts for about 28 percent of U.S. energy consumption. Petroleum accounts for nearly all (about 97 percent) of the transportation sector's energy use. Petroleum is a major component of transportation costs, and its usage affects the environment. Because more than half of the U.S. petroleum supply is imported, there are also national security concerns for assuring petroleum supplies.

| Transportation Energy Consumption | Jun-00 | Jun-01 |
|---|---|---|
| Quadrillion BTU | 2.26 | 2.31 |
| *Percent change from same month previous year* | *1.07* | *2.44* |

NOTE: The current value is compared to the value from the same period in the previous year to account for seasonality.

SOURCE: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, available at: http://www.eia.doe.gov/mer.

# TRANSPORTATION ENERGY USE PER DOLLAR OF GDP




BTU - British Thermal Unit
The average heat content of motor gasoline is 129,024 BTU per gallon. One quadrillion BTU is equivalent to 7.75 billion gallons of motor gasoline.

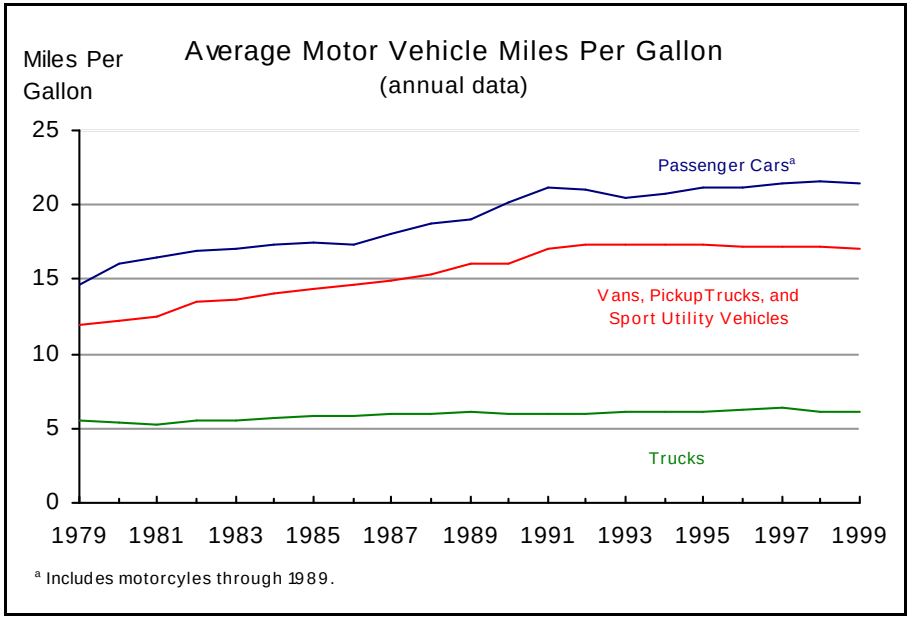
This indicator shows the level of energy use for transportation with respect to production of GDP and the levels of personal consumption in the United States over time. Transportation energy use reflects the seasonality of personal travel.

| Transportation Energy Use Per $ of GDP | Q2 00 | Q2 01 |
|---|---|---|
| Thousand BTU per Dollar of GDP | 2,878 | 2,994 |
| *Percent change from same quarter previous year* | *-4.67* | *4.05* |

NOTE: The current value is compared to the value from the same period in the previous year to account for seasonality.

SOURCE: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, available at: http://www.eia.doe.gov/mer.

## AVERAGE MOTOR VEHICLE MILES PER GALLON

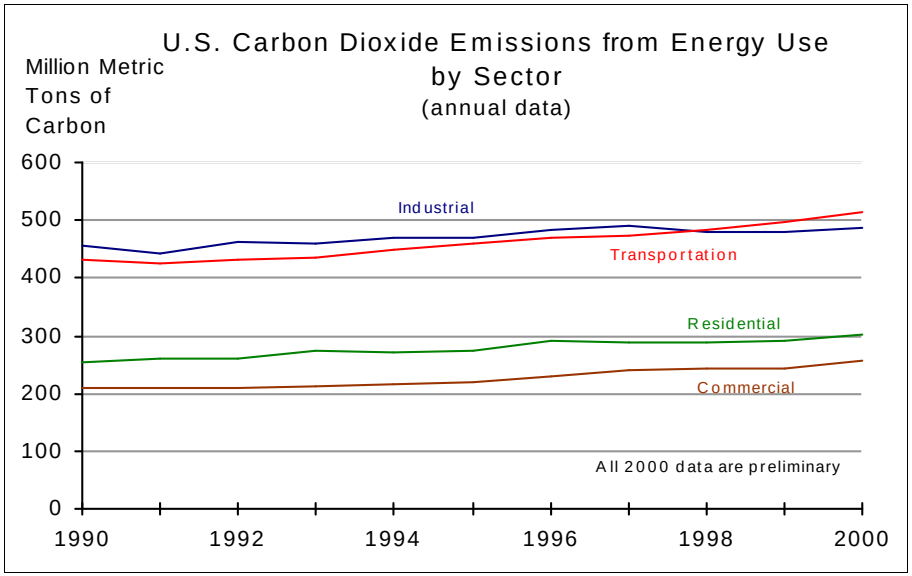



Since 1979, the average fuel rate of passenger cars, vans, pickup trucks, and sport utility vehicles have had an upward trend. In the 1990s, the fuel rates reached a more stable trend, and are now better than a decade ago. The fuel rates for trucks have not changed significantly. (The average fuel rate is calculated by dividing fuel consumption by mileage of a motor vehicle.)

| Average Motor Vehicle Miles Per Gallon | 1998 | 1999 |
|---|---|---|
| Passenger cars | 21.6 | 21.4 |
| *Percent change from previous year* | *0.47* | *-0.93* |
| Vans, Pickup trucks, SUVs | 17.2 | 17.1 |
| *Percent change from previous year* | *0* | *-0.58* |
| Trucks | 6.1 | 6.1 |
| *Percent change from previous year* | *-4.69* | *0* |

SOURCES: U.S. Department of Energy, Energy Information Administration, Monthly Energy Review. Available at http://www.eia.doe.gov/mer

# U.S. CARBON DIOXIDE EMISSIONS




MMTC = million metric tons of carbon
Tons of carbon can be converted to tons of carbon dioxide by multiplying by 3.667.

Carbon dioxide is a major greenhouse gas emitted from the burning of fossil fuels.

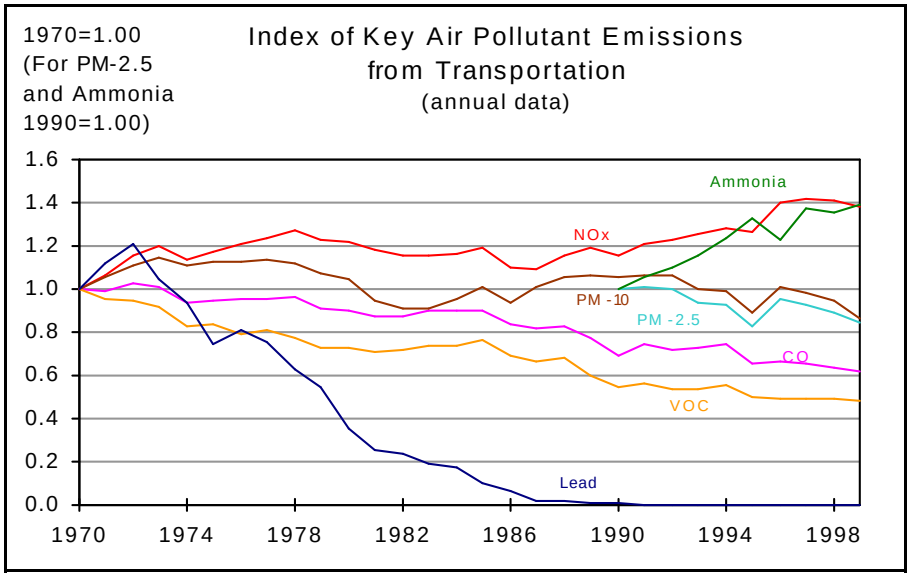
The transportation sector surpassed the industrial sector's carbon dioxide emissions for the first time in 1998. Historically, the industrial sector was the largest emitter of carbon dioxide.

| U.S. Carbon Dioxide Emissions | 1999 | 2000* |
|---|---|---|
| Transportation (MMTC) | 496 | 513 |
| *Percent change from previous year* | *2.90* | *3.43* |
| Industrial (MMTC) | 481 | 488 |
| *Percent change from previous year* | *0.21* | *1.46* |
| Residential (MMTC) | 290 | 301 |
| *Percent change from previous year* | *0.35* | *3.79* |
| Commercial (MMTC) | 244 | 256 |
| *Percent change from previous year* | *0.00* | *4.92* |

* Preliminary estimates

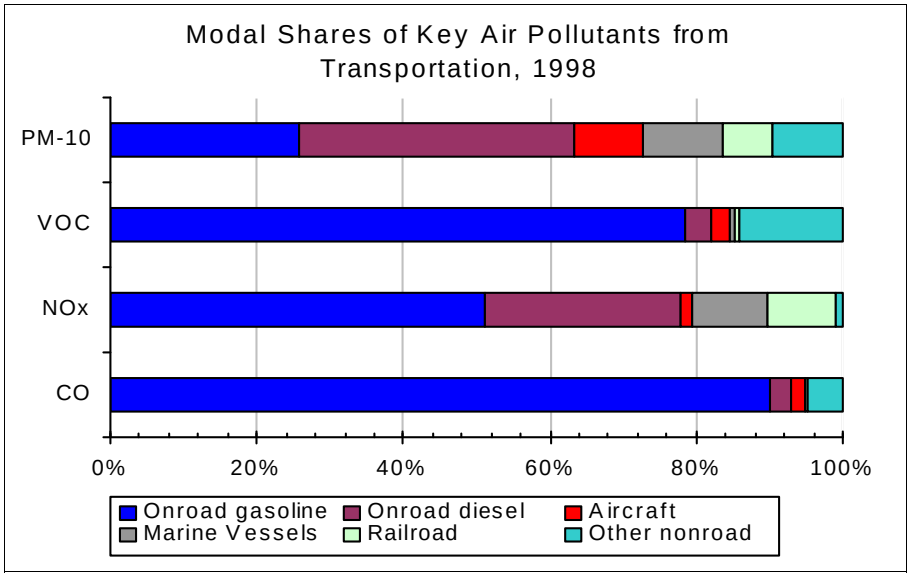
SOURCES: U.S. Department of Energy, Energy Information Administration, *Emissions of Greenhouse Gases in the United States, 1990-1999.* Available at: http://www.eia.doe.gov/oiaf/1605/ggrpt/index.html. For 2000 numbers: U.S. Department of Energy, Energy, Information Administration, Energy-CO2 Flash estimate, available at: http://www.eia.doe.gov/oiaf/1605/flash/sld001.htm

# AIR POLLUTANT EMISSIONS FROM TRANSPORTATION




| Thousands of Short Tons of Transportation Air Emissions | 1998 | 1999 |
|---|---|---|
| Carbon monoxide (CO) | 58,108 | 55,773 |
| Oxides of nitrogen (NOx) | 11,522 | 11,306 |
| Volatile organic compounds (VOC) | 6,829 | 6,681 |
| Particulate matter < 10 microns (PM-10) | 475 | 458 |
| Particulate matter < 2.5 microns (PM-2.5) | 387 | 368 |
| Ammonia | 262 | 270 |
| Lead | 0.5 | 0.5 |

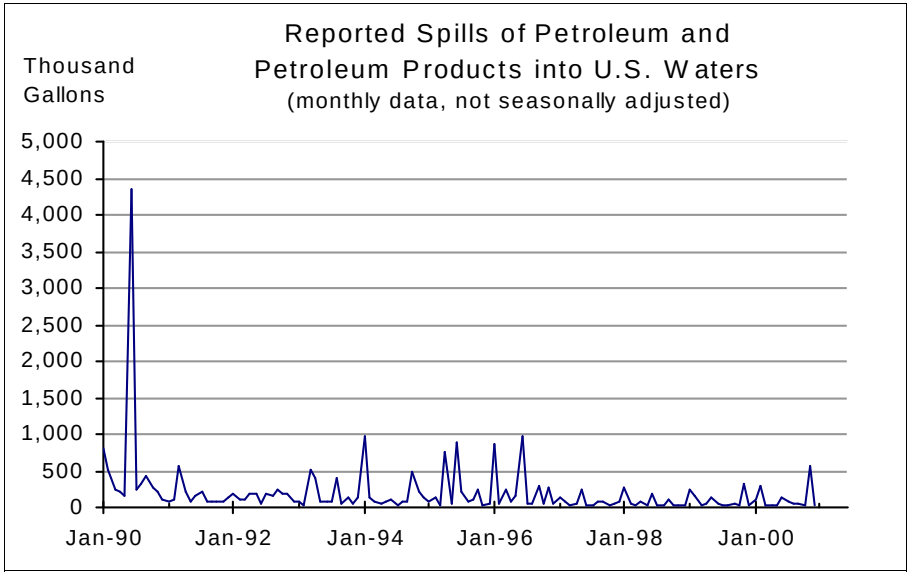
SOURCE: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards (OAQPS), National Emissions Inventory, available at: http//www.epa.gov/ttn/chief/trends/html




Despite rapid growth in vehicle use over the past two decades, emissions of carbon monoxide (CO) and volatile organic compounds (VOC) have declined, and lead emissions have been almost eliminated, leading to improved air quality. There have been reductions in particulate emissions (PM) at the 10 micron classification. Only emissions of nitrogen oxides ($NO_X$) remain above 1970 levels. (Ammonia and PM-2.5 were added to the list of regulated pollutants recently.)

Onroad vehicles contribute the largest share of air pollutants among all modes.

# CRUDE OIL AND PETROLEUM PRODUCTS SPILLS IN U.S. WATERS




NOTE: The spike in 1990 was caused by one tanker spill in the Gulf of Mexico.

Crude petroleum and petroleum products spills are costly to the environment and to society. Major oil spills are infrequent but can have large adverse impacts. Between 1995 and 1999, transportation was responsible for roughly 72 percent of the total gallons reported spilled. The remainder is from fixed facilities on and off shore; however, many of these facilities (such as marinas and ports) are transportation-related.

Data are only for reported spills. Unreported spills (such as from improper disposal of used motor oil into storm drains) also contribute to oil pollution, but the total volume of these spills is not known.

| Oil Spills | Dec-99 | Dec-00 |
|---|---|---|
| Gallons spilled | 26,796 | 21,056 |
| *Percent change from same month previous year* | *73.31* | *-21.42* |

NOTE: The current value is compared to the value from the same period in the previous year to account for seasonality.

Annual data from 1995 to 1999 were used to calculate the average percentage of transportation–related spills.

SOURCE: U.S. Coast Guard, Annual Data and Graphics for Oil Spills, available at: http://www.uscg.mil/hq/g-m